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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/720,759

11/25/2003

Hiroaki Matsumura

0055/057001

3107

22893

7590

09/23/2005

SMITH PATENT OFFICE  
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WASHINGTON, DC 20006

EXAMINER

NGUYEN, DUNG T

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,759

Applicant(s)

MATSUMURA, HIROAKI

Examiner

Dung (Michael) T. Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/25/03, 03/01/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 6, 8, 10-13, 16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of JP03145178.

With respect to claims 1, 4, 6, 8, 11, 16, and 18, Admitted prior art shows in fig.5-6 a ridge waveguide semiconductor laser diode 10 comprising: an n-type semiconductor layer 12; a p-type semiconductor layer 14 having a ridge 14a forming a waveguide; an active layer 13 disposed between said n-type semiconductor layer and said p-type semiconductor layer; a protective insulating layer 17 partially covering said ridge so as to expose at least a portion of a top face of said ridge; a p-side ohmic electrode 15 in ohmic contact with said portion of said ridge; a p-side pad electrode 19 disposed so as to connect to said p-side ohmic electrode.

Admitted prior art lacks an intermediate layer disposed between the electrodes.

JP03145178 teaches in Fig.1d a single intermediate layer (insulator) 4 disposed between the electrodes 2 and 5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Admitted prior art what is taught by JP03145178 in order to electrically insulate the electrodes from each other (abstract).

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With respect to claim 10, Admitted prior art discloses in Fig.6 a second protective insulating layer 18 disposed on a portion of said first protective insulating layer 17.

With respect to claim 12, Admitted prior art discloses a conductive joint material 23 (Fig.6).

With respect to claims 13 and 20, Admitted prior art discloses an InAlGaN semiconductor (para.0004).

Claims 2-3, 5, 7, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of JP03145178 and further in view of Hsu (2004/0108804).

With respect to claims 2-3 and 14, the admitted prior art and JP03145178 disclose all limitations of the claims except for the intermediate layer being a buffer layer including diffusion prevention means and adjusting adhesion.

Hsu teaches the intermediate layer being a buffer layer including diffusion prevention means and adjusting adhesion (para.0088).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the admitted prior art and JP03145178 what is taught by Hsu in order to provide strong adhesion between two layers and function as a diffusion barrier to prevent alloying between the two layers (para.0088).

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With respect to claims 5, 7, and 17, Hsu discloses the intermediate layer is selected from TiO.

Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of JP03145178 and further in view of Ko et al. (5436466). Admitted prior art and JP0145178 disclose all limitations of the claims except for the intermediate layer comprising two layers.

Ko teach in col.2, l.17-19 the intermediate layer comprising two layers.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the admitted prior art and JP03145178 what is taught by Ko to alternatively employ the intermediate layer comprising one layer or at least two layers.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of JP03145178 and further in view of Hsu (2004/0108804). Admitted prior art shows in fig.5-6 a ridge waveguide semiconductor laser diode 10 comprising: an n-type semiconductor layer 12; a p-type semiconductor layer 14 having a ridge 14a forming a waveguide; an active layer 13 disposed between said n-type semiconductor layer and said p-type semiconductor layer; a protective insulating layer 17 partially covering said ridge so as to expose at least a portion of a top face of said ridge; a p-side ohmic electrode 15 in ohmic contact with said portion of said ridge; a p-side pad electrode 19 disposed so as to connect to said p-side ohmic electrode.

Admitted prior art lacks an intermediate layer disposed between the electrodes.

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JP03145178 teaches in Fig. 1d a single intermediate layer (insulator) 4 disposed between the electrodes 2 and 5.

However, Admitted prior art and JP0145178 lack the intermediate layer including diffusion prevention means.

Hsu teaches the intermediate layer including diffusion prevention means (para.0088).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the admitted prior art and JP03145178 what is taught by Hsu in order to provide a function as a diffusion barrier to prevent alloying between the two layers (para.0088).

### Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Michael Dung Nguyen

  
JAMES MENEFFE